Proposed Criteria for Reimbursing eVisits: Content Analysis of Secure Patient Messages in a Personal Health Record System

Paul C. Tang, MD, MS, William Black, MD, PhD, Charles Y. Young, PhD
Palo Alto Medical Foundation
Palo Alto, CA

ABSTRACT

The Institute of Medicine called for healthcare organizations to provide care whenever needed, using the Internet as appropriate. Few organizations currently offer clinical electronic messaging services for their patients. Many believe that broader adoption of online services will not occur without a change in reimbursement policies. We propose modified Evaluation and Management (eVisit E&M) criteria derived from the current office-based E&M codes as a means of qualifying whether an online encounter should be reimbursed. Physician reviewers applied the proposed eVisit criteria to 120 randomly selected electronic messages sent by 112 patients to 69 physicians through a personal health record system. Twenty-two percent of clinical messages to physicians contained sufficient patient-history data and medical decision-making components to warrant reimbursement according to our eVisit criteria. Among a subset of patients with multiple chronic diseases, this would have generated an estimated 1.2 eVisits per patient annually. Across a broader patient population, we estimate that 0.7 eVisit encounters would be generated annually per patient. Sixty-five percent (65%) of patients felt that electronic communication with their physicians saved one or more office visits per year. Reimbursing for qualified eVisits may encourage broader use of electronic communication to improve access to care and reduce overall healthcare costs.

INTRODUCTION

The Institute of Medicine (IOM) offered the country a set of design rules for delivering care in the 21st-century.[1] In the first design rule, the IOM recommended creating a "continuous healing relationship" by providing care "whenever they need it and in many forms, not just face-to-face visits." While use of the Internet and e-mail has become commonplace in the United States, use of Internet-based communication in healthcare remains remarkably low[2,3] despite consumers' desire to communicate with their physicians electronically.[4]

Among the important barriers to widespread adoption is physicians' reluctance to embrace electronic messaging as an accepted mode of communication with their patients. Physicians are concerned about the anticipated volume of online requests, lack of integration with electronic health record (EHR) systems, security of the communication system, liability uncertainty, and lack of financial reimbursement.[5,6] Fortunately, excessive volume of patient e-mails or electronic messaging to physicians has not been shown to be a problem.[7-11] Use of traditional e-mail to connect patients and their physicians clearly represents a security risk, although patients seem to understand this risk and generally do not include sensitive content in e-mail messages.[9] More recently, organizations have implemented secure web-based messaging systems, either integrated with a provider-based electronic health record systems[10-12] or employing a separate web-based messaging channel through a third-party.[13] Web-based messaging systems provide SSL encryption, which secures transmission of confidential health information. Liability concerns have yet to be tested, although several organizations have published guidelines covering responsible use of electronic communication between physicians and their patients.[14,15] Lack of reimbursement for electronic communication remains a major barrier to providing patient care online.[5] In order to assess whether electronic communication deserves professional reimbursement, a better understanding of the content of such communication must be achieved.

The few content-analysis studies of electronic patient-physician communication published in the literature examined traditional e-mail communication. In one study, analysis of e-mail communication between patients and their physicians showed that only 43% of e-mail messages required a physician response.[9] The proportion of e-mail that requires physician response varies depending on how patients are instructed about proper use of e-mail and whether administrative messages can be routed elsewhere. When patients are given the direct e-mail address of their physician, the communication tends to be concise, medically relevant, and appropriate.[9] Use of e-mail, which was the predominant electronic communication form until recently, suffers from a number of limitations. The fact that e-mail messages traverse the Internet unencrypted may deter patients

and physicians from using the medium at all or cause them to avoid discussing substantive issues within the e-mail message. Today, secure web-based messaging is emerging as the predominant method of providing electronic communication between patients and their physicians. In addition to the security advantages, web-based messaging systems often allow patients to direct messages of different types (e.g., appointment requests, prescription renewal requests, lab test result queries, and billing questions) to the appropriate department.

Some researchers have examined the user characteristics of web-based messaging systems[12] and characterized the types of messages sent. We are not aware of a study that examined the content of secure web-based messages (as distinct from e-mail) sent to physicians. Understanding the content of these physician-directed messages is important to developing appropriate criteria by which to differentiate informal communication from reimbursable clinical services. The majority of electronic clinical messages are probably brief exchanges that do not involve significant professional medical decision-making. Some electronic messages, however, involve professional services comparable to that occurring in an office visit, and which may indeed replace the need for an office visit. Unfortunately, there is a built-in disincentive to use technology that reduces the number of office visits under the fee-for-service reimbursement model. In order to encourage use of the most appropriate and cost-effective means of delivering a particular service, reimbursement policies need to be developed that also recognize the professional component of online services.

Many payers have indicated their interest in exploring the feasibility of reimbursement for providing care using online communication tools (eVisits). Other than a few pilots, however, broad adoption of reimbursable eVisits has not materialized. Understandably, payers are not willing to provide a fee schedule for eVisits until reliable criteria can be applied in order to ensure that only bona fide and appropriate professional services rendered through this medium are billed to the payer. Such criteria should differentiate between administrative requests (e.g., appointment requests, prescription renewal requests, lab test result queries) and those requiring more substantive physician medical decision-making, analogous to that required in a traditional office visit.

The current CMS standard for evaluating the level of service provided during an office visit are the Evaluation and Management (E&M) codes, published in the Current Procedural Terminology (CPT) code set maintained by the American Medical Association. In use since 1966, these codes provide a uniform language to describe medical, surgical, and diagnostic services for public and private health insurance programs, utilization review, medical care review, and guideline development.

CPT codes are divided into three categories. Category I codes describe a procedure or service that is considered widespread standard of care. Category II codes are tracking codes used for performance measurement including quality assurance and compliance with state or federal law. Category III codes are tracking codes for new and emerging technologies intended to facilitate evaluation of those technologies. A new Category III code, 0074T, was added in 2005 as the official code for online encounters.[16] The encounter must be permanently documented in either electronic or hard copy format. As experience is gained, use of the code, which may be expanded to multiple levels of service, may move it into Category I status in future years.

In principle, an eVisit offers the opportunity to replace an office visit at a much lower cost, while providing the same level of clinical service. Consequently, we propose modifying the office-based E&M criteria to address the level of service rendered online. We used the standard office visit codes for established patients in primary care (99212, 99213, and 99214) as the model for our proposed eVisit E&M criteria (see Figure1). The level 2 eVisit code corresponds to an electronic version of the office code 99212, for example. The only difference between the office code criteria and the eVisit code criteria is the absence of a physical exam component. We specified two components: 1) History, which includes the chief complaint (CC), review of systems (ROS), and past medical history (PMHx); and 2) Medical Decision Making, based on the complexity of the presenting problem plus diagnostic and management options. According to our proposed criteria, an electronic clinical message must fulfill both the history and the medical decision-making components of the criteria to qualify as a reimbursable eVisit.

In order to test the feasibility and appropriateness of these draft criteria, we analyzed a random sample of electronic patient-physician messages which were transmitted in PAMFOnline, a personal health record (PHR) system operated by the Palo Alto Medical Foundation (PAMF). PAMFOnline is a comprehensive PHR system that is integrated with an

eVisit Evaluation and Management Documentation Requirements

eVisit encounters require all components of History and Medical Decision Making for eVisit level coded.

eVisit encounters must be a distinct episode of care supplanting an office visit to assign an eVisit code.

Encounter	History			Medical Decision Making	
	CC[1]	ROS[2]	PMHx[3]	Presenting Problem	Management
Level 2 eVisit simple	CC and one or more elements or Reviewed status of one or more chronic	Not required	Not required	One self limited or minor problem	Lab tests requiring venipuncture or U/A; or, nonpharmacologic self care or monitoring, e.g., rest, gargles, elastic bandages, or superficial dressing
Level 3 eVisit intermediate	CC and one or more elements or Reviewed status of one or more chronic	One system	Not required	Two or more self-limited problems or One stable chronic illness or Acute uncomplicated illness or injury	OTC medications, physical therapy, occupational therapy, referral
Level 4 eVisit complex	CC and four or more elements or Reviewed status of three or more chronic	Two to nine systems	One item from any	One or more chronic illness with mild exacerbation, progression, or side effects of treatment or Three or more stable chronic illnesses or Undiagnosed new problem with uncertain prognosis or Acute illness with system symptoms	Prescription medication management

1. CC (chief complaint) elements: location, quality, severity, duration, timing, context, modifying factors, associated signs or symptoms.
2. ROS (review of systems) elements: constitutional, musculoskeletal, skin, eyes, neurological, ENT/mouth, psychiatric, cardiovascular, endocrine, respiratory, hematological/lymphatic, gastrointestinal, allergy/immunology, genitourinary.
3. PMHx (past medical history) elements: past medical and surgical history, social history, and family history.

Figure 1. Proposed Evaluation and Management Criteria for eVisits (eVisit E&M codes)

EHR system.[11] The PHR and EHR applications are based on MyChart™ and EpicCare,™ developed by Epic Systems, Madison, Wisconsin. Using PAMFOnline, patients can access key components of their medical record (e.g., problem lists, medication list, allergies, health maintenance schedule, immunizations, lab test results, radiology results, patient instructions, and health information resources) and communicate with their physician. Patients may send a "medical advice request" clinical message to one of their physicians by clicking on the appropriate link and entering a subject and a free text message of up to 2000 characters in length. Physicians receive messages from patients in their EHR Inbasket (along with all their other clinical communication), and can access the patient's electronic chart at the touch of a button. Over 65,000 patients are enrolled in PAMFOnline, representing about a third of our primary-care adult patient population. All of the services provided through PAMFOnline are free except for electronic messaging with physicians, for which an annual fee of $60 per year for unlimited messaging is assessed.

METHODS

Following Institutional Review Board waiver approval, a random sample of 120 PAMFOnline patient-initiated medical advice messages along with their physicians' replies (index messages) were extracted from a pool of all electronic messages in the EHR database occurring over a six-month period from January 1, 2005 to June 30, 2005, and assembled as a text file. All personally identifying information from the text messages were redacted. These index PAMFOnline messages, plus any electronic messages, telephone encounter documentation, or office visit documentation that occurred seven days prior to or following the index message, were assembled in a corpus of text messages for review by two physicians.

The physicians (PT, WB) independently reviewed each of the 120 messages and categorized each message as one of the following: an eVisit (meeting the proposed E&M criteria), a medication request or question, a simple question or message, a question about a test, a proxy message (i.e., a message that applied to someone other than the sender), or a patient message that did not contain a documented response from a physician. We also noted if messages were directly related to a recent encounter within seven days, or were referred to another clinical care channel (e.g., telephone or office visit). Physician reviewers discussed, reconciled, and achieved consensus on any differences in the ratings.

Aggregate statistics about the types of messages submitted by patients through PAMFOnline, the demographics of the PAMFOnline users, and turnaround times for electronic messages to physicians were analyzed to provide a context for electronic messaging through PAMFOnline. All statistical analyses were performed using SAS™.

RESULTS

During the six-month sample window, 13,433 PAMFOnline medical advice messages were sent to physicians. The 120 randomly selected electronic messages originated from 112 unique patients to 69 physicians. Of the 120 messages, 3 were excluded from analysis because the user was acting as a proxy for another patient. The remaining 117 responses were evaluated according to the eVisit E&M criteria. Inter-rater reliability was excellent ($\kappa = .97$).

Most of the messages sent by patients to their

physicians consisted of updates on their clinical condition or simple questions about their health (48%), questions about their medications (19%), or questions about test results (7%). Two messages did not include a physician response in the documentation. This can occur if the physician uses another channel to communicate with the patient (e.g., decides to call the patient) and does not document the alternative communication, or could arise because the physician did not read the message during the study period. A total of 26 out of the 117 clinical messages (22%) sent to physicians fulfilled our proposed eVisit E&M criteria. An additional six messages (5%) resulted in asking the patient to come in for an office visit. Of the 32 total encounters requiring significant medical decision making (online or in the office), 26 (81%) of the encounters could be safely and adequately addressed online.

All of the eVisit encounters met the level 2 eVisit E&M criteria. The main reason that none of the eVisits met the level 3 or 4 eVisit criteria was a lack of a formal "review of systems." None of the eVisits were directly related to an office visit that occurred within seven days of the electronic clinical message.

Characteristics of PAMFOnline Messaging

The patient population enrolled in PAMFOnline messaging is older (average 51.6 years old vs. 46.1, $p<0.0001$), has more active problems (6.3 vs. 3.0, $p<.0001$), takes more medications (6.2 vs. 3.2, $p<.0001$), and conducts more office visits with PAMF (6.0 vs. 3.1, $p<.0001$) than the general PAMF patient population. Thus, PAMFOnline messaging subscribers have a greater need for medical services and presumably could benefit more from convenient and more continuous access to health care.

Patients who subscribe to the PAMFOnline messaging service send an average of 5.3 medical advice request messages to their physicians per year. Based on this pilot study, if 22% of the 5.3 messages qualified as eVisits, this subset of sicker patients would generate 1.2 eVisits per year. As noted above, this subset of patients has more chronic diseases and uses 1.9 times more healthcare resources than the general PAMF patient population. Adjusting for the acuity of the general patient population, we estimate the number of eVisits that would occur across our entire patient population to be approximately 0.7 eVisits per patient annually.

Most eVisit messages were answered with a single reply. The average number of message-reply transmissions was 2.19 (a patient message plus a physician reply counts as 2.0 transmissions). This implies that the information presented in the initial patient query was sufficiently detailed in order for the physician to make an appropriate decision and close the matter with the single reply. Turnaround time for physicians to respond back to the patient was generally quite responsive. Physicians replied to the patient's message with a median response time of 2.5 business hours and a mean response time of 7.2 business hours. The PAMFOnline website notifies patients to expect a reply from their physician within 1-2 business days.

DISCUSSION

One of the major impediments to physician adoption of secure electronic messaging with patients is a lack of reimbursement for professional services rendered over this medium. Although some payers are interested in taking advantage of electronic clinical messaging, their dilemma is how to determine which electronic communication involves sufficient data-gathering and medical decision-making activities to qualify for reimbursement. We proposed a set of criteria that is nearly identical to the office-based E&M coding criteria and have tested the feasibility of applying such criteria to a random sample of actual online patient messages occurring through PAMFOnline. We found that the criteria were easy to apply consistently. Because E&M criteria require analysis of the contents of the text documentation, it cannot be completely automated.

The 22% of electronic messages directed to physicians that met the eVisit criteria seemed appropriate since messages that do not specifically require physician professional services can be self-directed by patients to other administrative communication channels available through PAMFOnline. This is in contrast to the limited capability to triage and appropriately route traditional e-mail, the subject of much of the previous literature on electronic patient-physician communication. In addition, the patient population that is enrolled in PAMFOnline has a greater disease burden and consumes more healthcare resources than our general patient population. This contrasts with the experience of other healthcare provider groups whose online patient population has been reported as younger, healthier, and using fewer health care resources then their general patient population.[9,12] This could be due to the comprehensive set of clinical services available on PAMFOnline which may attract those with more health problems needing more services. A healthier population may have a lower percentage of electronic communication qualifying for an eVisit using our criteria. The

percentage of electronic messages in our study that qualified as eVisits is also probably higher than one would expect in a study of traditional e-mail communication. Providing patients access to their health record reduces the number of queries about test results, for example. Providing hyperlinks from elements in patients' records to explanatory information resources can also answer patients' questions without their needing to send messages to their physicians.

We have reason to believe that the modest increase in cost attributable to reimbursable eVisits would be more than offset by a reduction in office visit claims. In our 2006 PAMFOnline patient satisfaction survey, 65% of patient felt that the use of PAMFOnline clinical messaging with physicians avoided one or more office visits in the past year. [Unpublished data. 2006] The potential cost savings from reduced office visits would more than offset the cost of the estimated 1.2 eVisits per year in a subset of our patients who are older and significantly sicker than our general population and the 0.7 eVisits per year in our general population.

A limitation of our study is the relatively small sample size of electronic encounters that were reviewed. Although previous e-mail communication studies involved as few as two or five providers[7,8] and our sample involved 69 physicians and 112 patients, the pool of electronic messages that were analyzed in detail is relatively small. Our study serves as a feasibility study for our proposed eVisit coding criteria for reimbursement of online care. Larger samples would help confirm our results.

Despite the good intentions and motivations of providers and payers to take advantage of modern communication strategies that allow the delivery of cost-effective care online for certain services, it is clear that a reimbursement strategy must be designed to compensate providers for their investment in the technology and the delivery of professional services online. We have presented and tested a method of assessing the professional component of an electronic exchange between patients and their physicians that can be used to quantify the level service that must be present in an eVisit in order to be reimbursable. We encourage payers to seriously consider this model in order to facilitate the adoption of EHR and PHR systems. Sharing data and creating a robust communication strategy to link all members of the health care team, including the patient, may be the best way to improve care, improve coordination, and reduce costs. A fair method of compensating physician professional time for rendering care online is needed. We believe that basing our coding criteria for eVisits on established office visit E&M coding criteria justifies the reimbursability of physician-patient electronic encounters meeting the criteria.

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